



**Ekstrom Aquaculture, LLC (Ekstrom) Waiver Request related to Brackish
Groundwater for a Fish Farm Expansion
Submitted to Texana Groundwater Conservation District**

Applications to drill seven new non-exempt brackish water wells (ADW numbers to be assigned) and an application to operate a well field (AOWF-20190304-03) have been submitted and are subject to this permitting package.

This permitting package is related to:

- application ARW-20190304-01 to register a grandfathered non-exempt well;
- application AVW-20190304-02 to validate a grandfathered non-exempt well;
- application ARGNW-20121023-06, production permit VP-20121115-01, and well GW-00115;
- the following wells operating under aggregate permit AP-20121203-14:
 - application ARGNW-20121117-01, production permit VP-20121203-01, well GW00112;
 - application ARGNW-20121117-02, production permit VP-20121203-02, well GW-00113;
 - application ARGNW-20121117-03, production permit VP-20121203-03, well GW-00116;
 - application ARW-20130711-01, well NW-00145;
 - application ARGNW-20121117-04, production permit VP-20121203-04, well GW-00130;
 - application ARW-20130111-02, well NW-00146;
 - application ARGNW-20121117-05, production permit VP-20121203-05, well GW-00110;
 - application ARGNW-20121117-06, production permit VP-20121203-06, well GW-00114;
 - application ARW-20130700-03, well NW-00147;
 - application ARW-20130711-04, well NW-00144;
 - application ARGNW-20121117-07, production permit VP-20121203-07, well GW-00111;
 - application ARW-20130711-05, well NW-00143.

The purpose of submitting this permitting package is to request the necessary authorization, through the submittal of drilling permit applications, an aggregate production permit application, and this waiver request, for the drilling of seven water wells and the operation of a well field comprised of the proposed wells, the well GW-00115, and the wells currently operating under aggregate permit AP-20121203-14. The well field will be located on two tracts of contiguous land (894 acres total) owned by Ekstrom in southeastern Jackson County near Carancahua Bay. The maximum production rate is not to exceed the rates listed for each well on the table attached to the well field application, with a maximum aggregate production rate not to exceed 9,210 gallons per minute. Maximum volume produced from the well field is not to exceed 5,884 acre-feet per year, which is the combined volume of the existing authorized production of both AP-20121203-14 and well GW-00115 and the volume to be authorized under AVW-20190304-02.



1205 FRANK STUBBS DRIVE • EL CAMPO, TX 77437
TEL 979-543-8989 • INFO@EKSSENT.COM • EKSSENT.COM



The aggregate production volume limitations are designed to limit the production of freshwater to the grandfathered amounts, but allow Ekstrom the flexibility to displace some or all freshwater use with brackish water. The extent to which the latter occurs will depend on environmental conditions such as temperature, salinity and rainfall amounts.

This permitting package seeks relief from the following production-related rules and requirements of the District: Item 13 of Rule 4.3 (Production Permit Conditions); Item 3 of Rule 6.4 (1/2 AFYA Limitation).

This permitting and waiver request seeks relief from the following spacing-related rules and requirements of the District: Item 1 of Rule 5.2 (Well Separation Requirement for Well Fields).

This permitting package seeks relief from the following administrative rules and requirements of the District: Item 12 of Rule 4.2 (Required information for an application for a drilling permit); Items 9 and 10 of Rule 4.3 (Required information for an application for a production permit); Item 4 of Rule 4.11 (Attempts to obtain adjacent landowner waivers).

This permitting package seeks a partial waiver of rules and requirements with variances.

This permitting package seeks a variance to authorize the operation of the proposed wells in a manner that:

- 1) Does not cause drawdown in the brackish zone at the property line to exceed 15 feet;
- 2) Does not cause or contribute to the intrusion of saltwater into freshwater aquifers by causing the interface between saltwater and freshwater to migrate upward or inland beyond the subject property.

This permitting package seeks a variance to allow the proposed wells of the well field to be drilled at depths not to exceed 250 feet below the surface in locations that are closer than 9,210 feet (i.e., the offset distance required based on the proposed production rate in gallons per minute) to registered wells (e.g., GW-00092, GW-00421, GW-00419 and GW-00420) owned by a person other than Ekstrom.

This permitting package seeks a variance to allow the information submitted with the standard permit applications, the report Assessment of Proposed Groundwater Production at Ekstrom Aquaculture LLC Expansion Project authored by Venkatesh Uddameri, Ph.D., P.E., and any addenda to the report authored by Venkatesh Uddameri to suffice for the requirements established under item 8 of Rule 4.11, item 9 of Rule 4.3, and item 10 of Rule 4.3. This permitting package seeks a variance to the requirement of Item 4 of Rule 4.11 to attempt to obtain waivers from adjacent landowners and well owners because the impacts anticipated to occur at or on adjacent land is minor given the poor quality of the water and general lack of well development in the target formation (i.e., to a depth of approximately 250 feet below ground surface) of the proposed wells.

The requested waiver and variances sought through this permitting package would be necessary for the life of the wells and any replacement wells drilled during the operation of the fish farm.

The primary basis for requesting the waiver and variances as well as the basis for the District to find good cause to grant this request is the production of groundwater of lower quality (i.e., groundwater with TDS levels in excess of 3,000 mg/L) reduces or eliminates potential impacts of that groundwater production on groundwater of higher quality (i.e., groundwater with TDS levels below 3,000 mg/L) for current and future groundwater users. Furthermore, the location of the site, which is in close proximity to the Carancahua Bay with a demonstrated connection to the shallow (high-TDS) groundwater formations, and the hydrostatic pressures in the shallow groundwater formations at the site reduce the potential of negative impacts such as significant drawdown or water quality degradation on the wells or groundwater resources in the vicinity of the site.

The requested waiver and variances are needed to ensure that sufficient high-TDS groundwater can be produced to effectively operate a fish farm, including filling and maintaining ponds as well as providing thermal refuges for fish stock during severe cold weather events.

If the waiver, variances, and permit requests are not approved, the fish farm would have to rely entirely on the previously-authorized historic-use production of low-TDS groundwater, new historic-use production for which authorization is presently being requested under recently-filed permitting applications (i.e., fresh water), and limited high-TDS groundwater production which are insufficient to support the expanded fish farming activities.

The following permitting conditions would be acceptable if the permitting package is approved by the District:

- 1) Ekstrom will agree to drill a monitoring well into the same brackish zone that the new wells will produce from;
- 2) Ekstrom will agree to drill a monitoring well into the fresh zone typical of domestic wells in the area;
- 3) The monitoring well(s) will be drilled at a location to be mutually agreed upon by the District and Ekstrom, but presumably close to the north property line;
- 4) Ekstrom will agree to measure static water levels in the monitoring wells on at least a monthly basis;
- 5) Ekstrom will agree to measure TDS/salinity in the monitoring wells on at least a monthly basis;
- 6) Ekstrom will agree to compile and submit the data to the District on a quarterly basis or on some other reasonable basis determined by the District.

The following performance standards would be acceptable if the permitting package is approved by the District:

- 1) Drawdown in the brackish water monitoring well to be no greater than 15 feet on a 6-month rolling average;
- 2) TDS in the fresh monitoring well to be no greater than 200 mg/L above the historical average for the well;
- 3) TDS in the brackish monitoring well to be greater than or equal to 3,000 mg/L and less than or equal to 20,000 mg/L (near the maximum TDS previously measured in Ekstrom's existing brackish wells) on a 6-month rolling average;
- 4) In the event conditions in the monitoring wells do not comply with the preceding standards, production from the brackish wells will be curtailed until such time as conditions become compliant, and the only allowable production will be from historic use wells at a rate and in the volumes validated by the District when approving the historic-use protection permits of the subject wells;
- 5) To the degree that widespread conditions such as drought or flooding may contribute to changes in the monitoring wells, those contributory effects will be excluded for purposes of determining compliance with these standards. Average drawdowns from the District's monitoring wells that are outside of a 5-mile radius from Ekstrom's property shall be used to calculate those contributory effects.

This permitting package is, in part, supported by the report titled Assessment of Proposed Groundwater Production at Ekstrom Aquaculture LLC Expansion Project authored by Venkatesh Uddameri, Ph.D., P.E. and Report 1 of the Texas Water Development Board titled "Ground-water Resources of Jackson County, Texas", dated October, 1965, and authored by E.T. Baker, Jr, Geologist.

Included with this waiver request and made part thereof:

- Application to Operate a Well Field AOWF-20190304-03;
- Maps of Ekstrom's Palacios Farm showing currently permitted wells, the well to be grandfathered (IW-3) and proposed new brackish wells (BW-12 – BW-18);

- Figure 27, a surface map from the above mentioned TWDB Report 1 (Baker), modified to highlight the location of Ekstrom's Palacios Farm in relationship to Carancahua Bay and the areal extent of shallow brackish water overlying deeper fresh water. This map demonstrates the discreet nature of the shallow brackish water and supports the conclusion that the target production zone is in communication with the bay;
- Plate 3, a cross-sectional map from the above mentioned TWDB Report 1 (Baker), showing the boundaries of fresh and saline waters in the Gulf Coast Aquifer along a NNW transect through Jackson County. The map has been modified to highlight the location of Ekstrom's Palacios Farm in relationship to the area where shallow brackish water overlies deeper fresh water. This map demonstrates the discreet nature of the shallow brackish water and supports the conclusion that the target production zone is in communication with the bay.

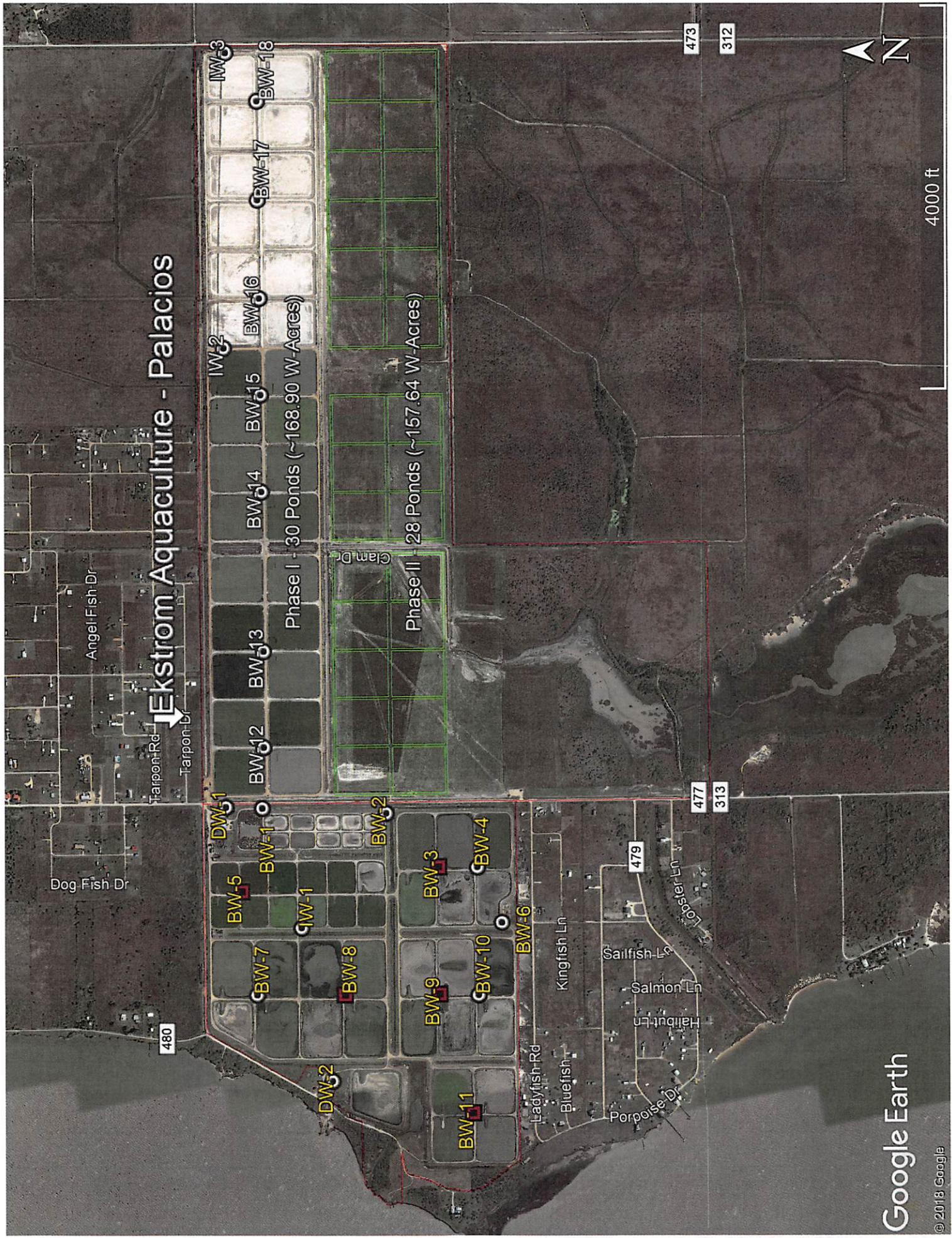
I, James P. Ekstrom, certify under penalty of law that the waiver and variance request was prepared under the direction or supervision of the landowner, landowner agent, or authorized operator and that the information submitted is, to the best of his or her knowledge and belief, true, accurate and complete.

I, James P. Ekstrom, am authorized to act as the agent of the landowner of the subject tract of land, Ekstrom Aquaculture LLC.

James P. Ekstrom, President
Signature

3/5/2016
Date

James P. Ekstrom, President



Ekstrom Aquaculture - Palacios

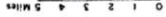


Ekstrom Aquaculture - Palacios Expansion Project

Legend

- Dike
- Property Lines

BW-12: Latitude 28°41'14.68"N - Longitude 96°22'46.56"W
BW-13: Latitude 28°41'14.81"N - Longitude 96°22'35.29"W
BW-14: Latitude 28°41'15.19"N - Longitude 96°22'16.61"W
BW-15: Latitude 28°41'15.39"N - Longitude 96°22'5.31"W
BW-16: Latitude 28°41'15.64"N - Longitude 96°21'54.00"W
BW-17: Latitude 28°41'15.91"N - Longitude 96°21'42.48"W
BW-18: Latitude 28°41'16.08"N - Longitude 96°21'30.88"W
IW-3: Latitude 28°41'19.40"N - Longitude 96°21'25.29"W



Line of vertical shift in base of fresh water

of the fresh water, in feet below sea level

—0011—

water, in feet below or above (+) sea level

EXPLANATION

Figure 27

U. S. Geological Survey in cooperation with the Texas Water Development Board and Jackson County

in Jackson County and Adjacent Areas

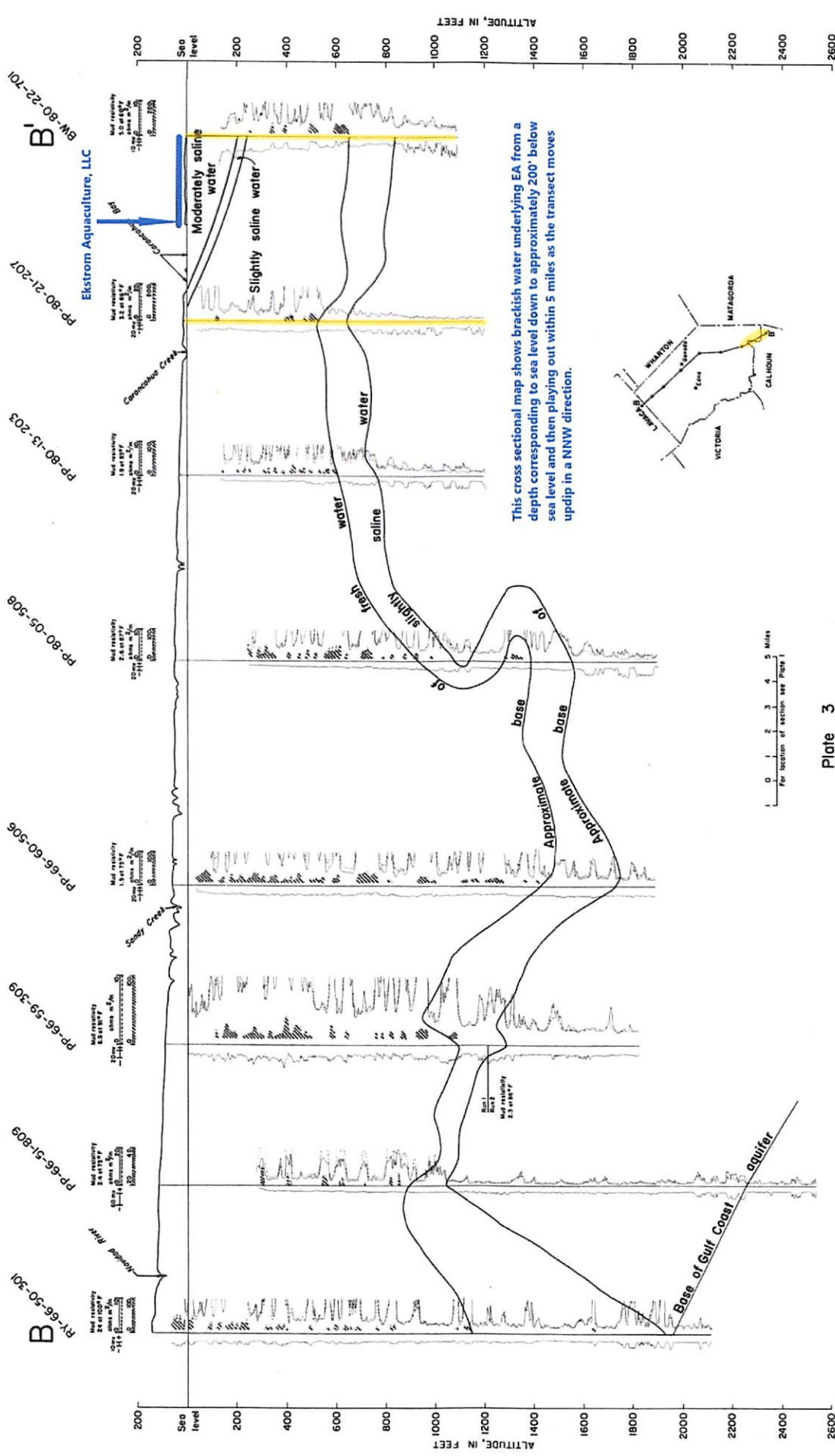


Plate 3

Section B-B' Showing Approximate Base of the Fresh Water and of the Slightly Saline Water, Jackson County and Adjacent Areas

U.S. Geological Survey in cooperation with the Texas Water Development Board and Jackson County